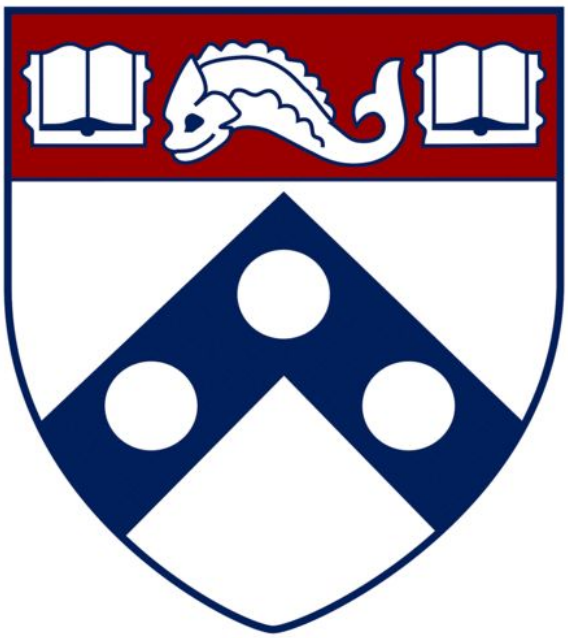

Capstone Project 2020

Healthcare financing in Botswana and Ghana: A Comparative Study

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Submitted in partial fulfilment of the Health and Societies Bachelors Degree in the History and Sociology of Health Department at the University of Pennsylvania

INTRODUCTION

This study emerges in a time when Covid-19 has been bringing havoc on the world-health arena. The strengths of public health systems have been tested and this period serves as a time to evaluate the efficacy of government's duty towards the citizen's right to healthcare. This paper explores two governments with different models for universal health coverage on continental sub-saharan Africa.

As part of the commitment by governments to offer high quality and high access to their country's populations, Universal Health Coverage is a milestone that ministries of health in Low to Middle Income Countries (LMICs) strive to achieve. These goals are reflected in the World Health Organization's 2019 Global monitoring report whose mission is to document efforts to move towards Universal Health Coverage.[1] Despite the attempt of providing equitable and affordable access to health services, implementation of universal healthcare models falls into the trappings of operating with a sacrifice in quality.

Healthcare spending constitutes a sizable amount of government expenditures. As much as nations have an imperative to offer high quality and high access to healthcare services to their citizens, they are also faced with the inescapable necessity to control spending. Health Technology Assessments (HTAs) are programs that systematically evaluate health technologies or health interventions in order to weigh up the benefits against the detriments of the system. HTAs expose inefficiencies in health systems and thus help governments effectively allocate and spend funds in ways that give the optimum output. Unfortunately, there have not been many HTAs done for countries in sub-Saharan Africa.

This study will investigate the quality of health outcomes in countries which have achieved universal health coverage through two different health access models. These countries are Botswana and Ghana. Granted, each country's performance is influenced by factors specific to its socio-economic and political landscape, the study will take these into consideration when making claims. The hope is that the lessons drawn upon in this evaluation will be a contributory tool utilized by governments when making decisions on health care financing mechanisms and spending in developing countries. The research

question is - has improved access through universal health coverage translated to utilization of high-quality services and better health outcomes? Through the example of Botswana and Ghana, I will support the claim that contributory health insurance schemes are not the most efficient or equitable ways to finance healthcare in sub-saharan African countries. I will support the claim by showing that Ghana has achieved universal health coverage through a mandatory contributory insurance scheme but its health outcomes are steady, showing little improvement. This is compared to Botswana which has achieved universal health coverage through government revenue from minerals. Botswana's health outcomes are rapidly improving and outperforming in areas such as maternal mortality.

BACKGROUND

Selection of case countries

Botswana is a Southern African country with a population just over two million in 2019.[2] It has a relatively high gross domestic product per capita of US$7,961 as of 2019. Botswana is a socialst country in which all citizens are entitled treatment at all taxpayer funded facilities. Ninety eight percent of the health facilities are run by the government.[2] As such, Botswana has achieved universal health coverage.

Ghana is a Western African country with a population just over thirty million in 2019. It has a relatively medium gross domestic product per capita of US$2,202 as of 2019.[3] In Ghana, the National Health Insurance Scheme provides citizens with accessible and affordable health insurance. Premiums are based on income level.[3] Ghana has also achieved universal health coverage.

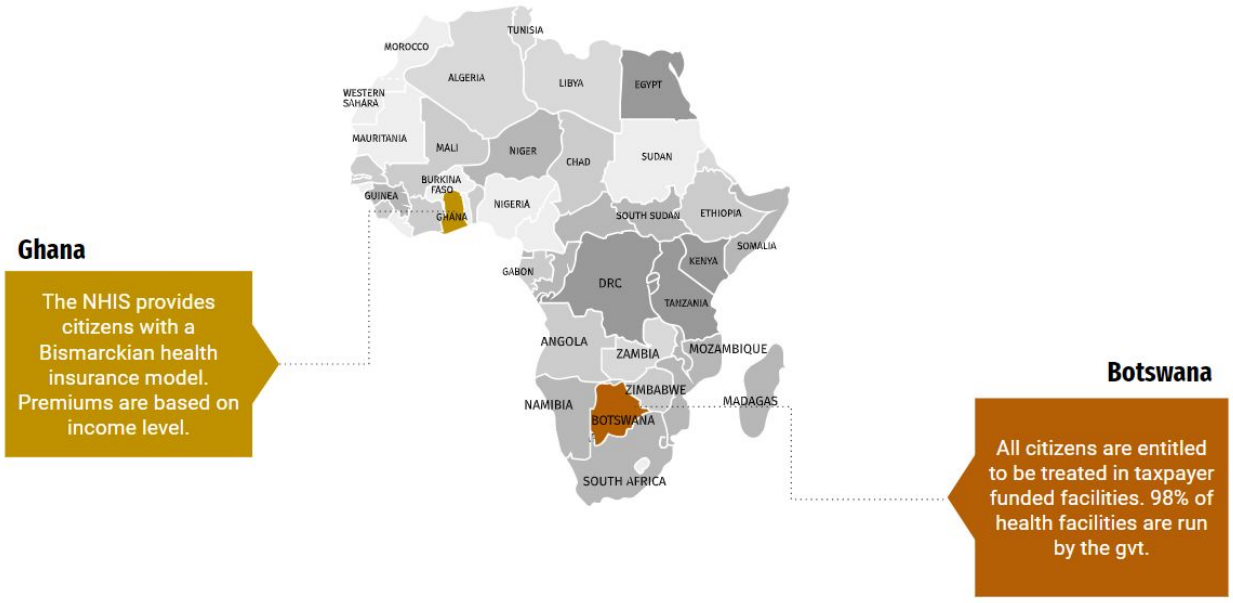

Figure 1. Location of Ghana and Botswana in Africa (Image created by Angela Kumirai using SlidesGo)

The study focuses on these two countries because they have achieved universal coverage but they show variability in healthcare access models i.e. universal coverage in Botswana that is supported by government revenue from minerals and universal coverage in Ghana that is supported by mandatory contributory premiums under a National Health Insurance Scheme. The study attempts to show if utilization of health services has translated to improved health outcomes in these countries that have achieved universal health coverage. The variability in population size is factored out by looking at statistics on a per capita basis. The variation in GDP of the countries is a natural consequence of political and socio-economic organization; a factor that we cannot really control for. The political and socio-economic landscapes of the two countries are based on a British colonial legacy. Also, all three countries are not experiencing any forms of serious conflict, as conflict or social unrest would be a significant determinant of health outcomes in a country.

A potentially confounding variable in this study would be the effect of geographical variability and the environment's effects on the populations' health. The countries are in different geographical regions - Ghana in the tropics near the Equator, and Botswana in the desert. Climate and weather conditions are very important determinants of health. Variations of disease occurrence and prevalence are dependent on local flora and fauna, temperatures and other location-dependent conditions. To control for this, the countries' top ten causes of death were examined and there was a general agreement in the diseases that afflict these three countries. These are shown in Table 1. These countries share eight of their top ten causes of death. This partially offsets the variation of environmental factors that might affect health outcomes since their health systems are tackling similar health problems.

	Botswana	**Ghana**
1	HIV/AIDS	Malaria
2	Ischemic Heart Disease	Lower Respiratory Infections
3	Stroke	Neonatal Disorders
4	Lower Respiratory Infections	Ischemic Heart Disease
5	Diabetes	Stroke
6	Diarrheal Diseases	HIV/AIDS
7	Tuberculosis	Tuberculosis
8	Neonatal Disorders	Diarrheal Diseases
9	Chronic Obstructive Pulmonary Disease	Road Injuries
10	Alzheimer's Disease	Diabetes

Table 1. Snapshot of Botswana and Ghana's top ten causes of death. Diseases highlighted green appear in all two countries.[4,5]

Definition of Variables

In healthcare delivery, there are trade offs between cost, access, and quality. This is called the iron triangle of healthcare.[6] The iron triangle trade offs stipulate that an increase in either quality might cause a corresponding increase in cost and decrease in access. The independent variable that the study will be testing is access to healthcare. Access will refer to the different modes with which healthcare is provided by the governments of these countries and the availability of health infrastructure and services per capita. The dependent co-variables will be quality and cost. Quality of healthcare will be measured by health outcome indicators that are reported by the World Health Organization. Cost will refer to individual and government expenditures on health services. The research question that this study tries to answer is: how does the mechanism of financing healthcare access affect the quality of healthcare in developing countries? In other words, how is the iron triangle of healthcare balanced in different health systems. The relevance of answering this question is to show how increased access has translated into an improvement in the quality of healthcare in these countries. In the discussion section, I give ideas on why outcomes are different for the two countries and recommendations on what seems to be working and not working in terms of universal health coverage.

METHODS

In this study, relevant quantitative data from the WHO's Global Health Observatory database was gathered and evaluated. Qualitative research was employed through literature reviews on health technology and access systems in Botswana and Ghana. Finally, virtual and telephone interviews were conducted to understand real-life unreported phenomena in these healthcare systems. These interviews were geared towards learning more about the countries' response to the COVID-19 pandemic since not much literature has been produced so far on the topic.

Cost

In this study, health expenditures by governments and individuals were analyzed. This was accomplished by graphing figures published by the WHO's Global Health Index from 2010 to 2017. Individual's contributions to healthcare were illustrated by graphing out-of-pocket expenditures per capita of the three countries from 2010 to 2017. Government expenditures on health per capita were calculated by subtracting out of pocket expenditures from total health expenditures. These government expenditures in this study refer to funds that are not injected by the individual at the time of health seeking. These can be in the form of funding from taxpayer revenue dedicated to healthcare, dedicated national programs, subsidy programs and donation or gifts to the government for healthcare.

Access

Health access in this study was characterized by charting the availability of access indicators. These were health infrastructure, births attended to by skilled personnel and HIV therapy availability. Health infrastructure was exemplified by access to hospitals. The type of hospital was also taken into consideration. Births attended by skilled personnel was an indicator of access to human infrastructure that contributed to better outcomes in infant mortality rates. HIV therapy rates were also included as a measure of access to care required for a disease that inflicts all three countries. HIV management requires ongoing and persistent attention so that its development into full blown AIDS. Since those affected by HIV/AIDS are more vulnerable to comorbidities such as tuberculosis, its proper management can ripple into better outcomes of related diseases.

Quality

Health quality indicators in this study were evaluated by examining adult mortality rates, life expectancies, maternal mortality ratios and deaths due to tuberculosis among HIV negative people. The purpose of graphing deaths that are due to tuberculosis among HIV negative people is that tuberculosis is

a very common comorbidity of HIV/AIDS. Thus, the trends produced from these figures will reflect the health system's management of Tuberculosis alone.

RESULTS

Cost

Botswana government spends more per capita

About 98% of healthcare is funded by the government in Botswana through primary care offered at health posts and clinics that make up 95% of the government health facilities.[7] 54% of health expenditures are funded by the country's mineral resources.[7] Companies and individuals pool about 39% of health funding through private insurance schemes. Only 7% of health funding is from external sources such as donors.[7]

In Ghana, health care financing is mainly through a mandatory contributory health insurance called the National Health Insurance Scheme. It is controlled by the Ghanaian Ministry of Health and the Ghana Health Service. The National Health Insurance Scheme is financed by premiums that are dependent on levels of income. The National Health Insurance Scheme is funded by a National Health Insurance Levy that is 2.5% of taxable income.[8] The 2.5% levy finances 70% of the NHIS.[8] The rest is financed by a monthly payroll deduction to the Social Security and National Insurance Trust (SSNIT) pension fund that formal workers contribute to. Individuals who work in the informal sector are required to make annual premium contributions to their respective District Mutual Health Insurance Schemes (DMHIS).[8] These premiums are income related. However, at times it is difficult to assess the income of informal workers. As such, a flat rate premium is sometimes charged by the District Mutual Health Insurance Schemes. Elderly people, children, pregnant women and poor people are exempt from contributing to the NHIS.[9]

Total health expenditures per capita in Botswana were much higher than those in Ghana in the period between 2010 and 2017 (Figure 2a). However, out-of-pocket expenditures per capita were the lowest in Botswana and highest in Ghana (Figure 2b) suggesting that Motswana (a citizen of Botswana, plural Batswana) pay less individually in health seeking and Ghanaians pay relatively more. Government

expenditures per capita were highest in Botswana than Ghana (Figure 2c). Ghana has the highest out-of pocket costs and the lowest government expenditures comparably between the three countries.

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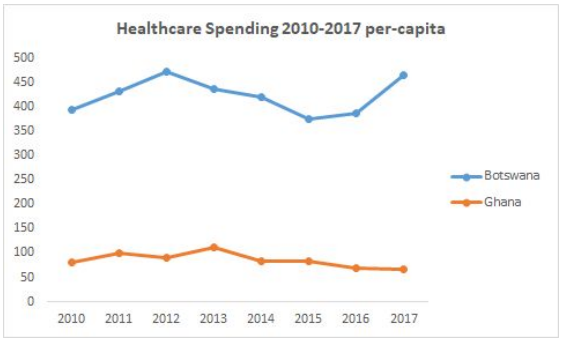

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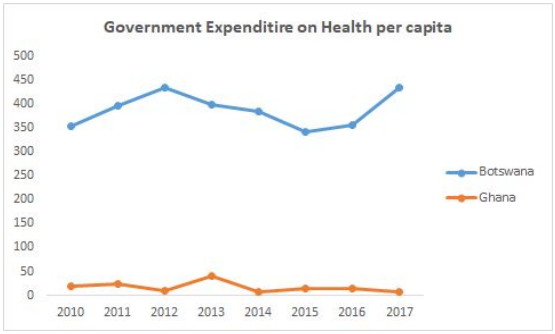

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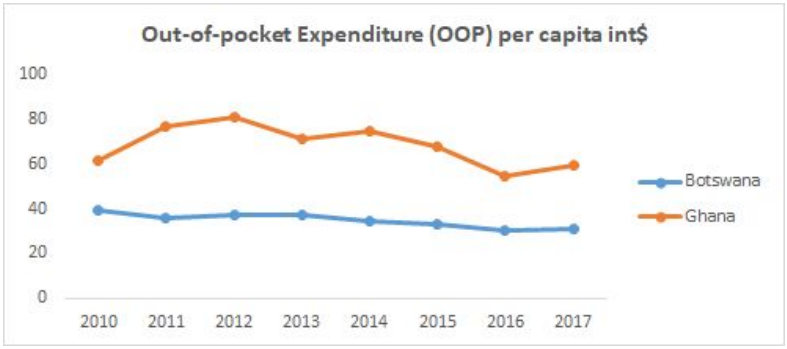


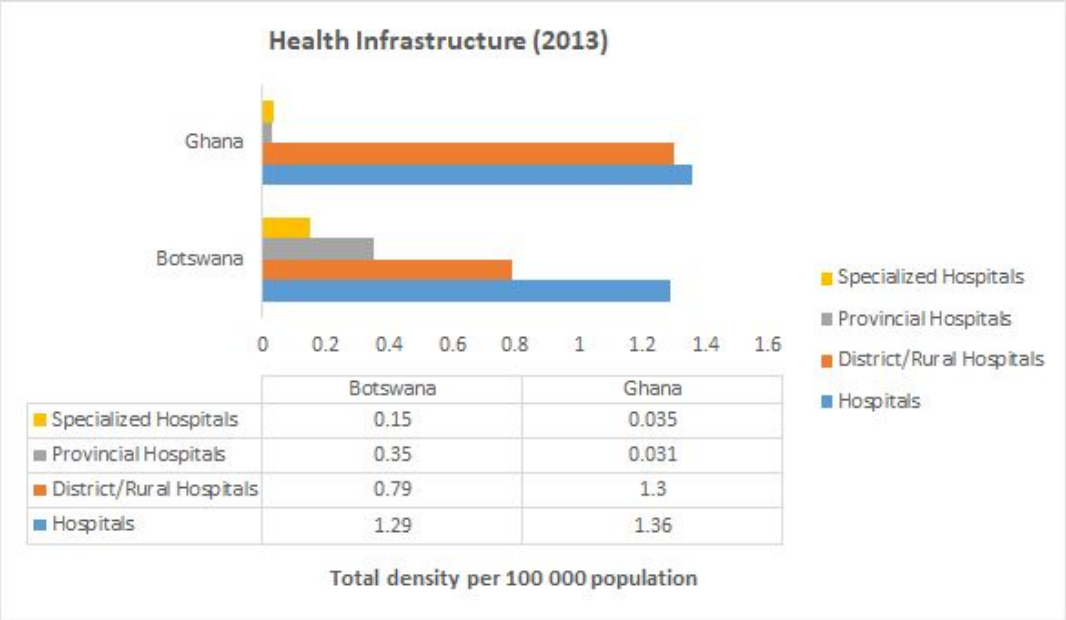
Figure 2. a) Total healthcare expenditures per capita between 2010 and 2017.[10] b) Government expenditures per capita on health between 2010 and 2017.[11] c) Out of pocket expenditures per capita between 2010 and 2017.[12]

Access and Quality

i) Botswana and Ghana have similar access to hospitals but Botswana has higher quality infrastructure

In this study, hospital availability was used as an indicator of access to healthcare. The type of hospital was used as an indicator of quality (Figure 3). Specialized hospitals were assumed to have the highest type of care, since they would more likely have specialized personnel and specialized equipment. However, specialized hospitals are not big and do not cater to a lot of people. The access to specialized

hospitals is limited as patients would most likely need an appointment to access them. Provincial hospitals have higher quality care than district or rural hospitals because they are bigger and have more access to resources and doctors. However, district and rural hospitals have the greatest access since they are the first level of care before complicated cases are transferred to provincial or specialized hospitals. In 2013, Ghana had 1.36 hospitals per 100 000 population. This was compared to Botswana's 1.29 per 100 000 density. When comparing provincial hospital access, Ghana has 0.031 hospitals per 100 000 population density, compared to Botswana's 0.35 per 100 000 population density. This data means Botswana has better quality health infrastructure than Ghana.



	Botswana	Ghana
Specialized Hospitals	0.15	0.035
Provincial Hospitals	0.35	0.031
District/Rural Hospitals	0.79	1.3
Hospitals	1.29	1.36

Figure 3. Hospital availability by type in Botswana and Ghana in 2013. [13]

It is important to note that the efficiency of Botswana's health infrastructure might be because Botswana has a much smaller population than Ghana. Statistics may favor Botswana because more access is easier achieved with a smaller population. The following tables are reconstructed from information provided on the number of hospitals in Botswana and Ghana.[14] The distribution shows that Botswana has way fewer hospitals than Ghana. However, these hospitals are sufficient for the population of Botswana. The per capita statistics favor Botswana. It is harder to achieve goals for larger populations such as that of

Ghana. Botswana has the majority of its primary care at mobile posts and health posts. Other than that, the big hospitals are very few compared to Ghana's.

Hospital Type	Botswana
Referral Hospital (MoH)	3
District Hospital (MoH)	7
Mine Hospitals	3
Mission District Hospital (fully funded by Government)	2
Private Hospitals	2
Primary Hospitals (MoH)	17
Health Clinics (with beds)	104
Health Clinics (without beds)	173
Health Posts	349
Mobile Posts	856

Hospital Type	Ghana
Government	897
Mission	182
Private	673
Quasi-Government	34
Others	46

Table 2: Distribution of hospitals in Botswana and Ghana.[14]

ii) Mortality and life expectancy

From 2000, Ghana has had a steady slow decrease in their adult mortality rates at 309 deaths per 1000 adult population, that is very much lower than that of Botswana which had 601 deaths per 1000. On the other hand, Botswana has a rapidly declining adult mortality rate that is converging with that of Ghana in 2016 (Figure 4a). Ghana has been performing well in keeping adult mortality rates low, and Botswana has been making progress towards reducing their adult mortality rates to 249 deaths per 1000 population compared to Ghana's 214 deaths per 1000 population.

Health Life Expectancy (HALE) at age 60 is the average number of years that a 60 year old can expect to live if mortality levels remain constant. In 2000, Ghana had better health life expectancy at age 60 than Botswana (Figure 4b). In 2005, Ghana and Botswana converged but after that till 2016, Botswana

has been performing better, with Batswana 60 year olds expected to live one more year longer than Ghanaian 60 year olds. The same measurement for newborn babies was also recorded by the WHO's Global Health Index. Botswana and Ghana are performing at similar rates. In 2016, newborns in Botswana and Ghana could expect to live for 56 and 57 years respectively if current death rates do not change (Figure 4c).

Maternal mortality ratios were graphed to show the outcomes of maternal health efforts. In 2000, Botswana had 262 deaths per 100 000 live births. This was compared to Ghana's 484 deaths per 100 000 births. In 2017, Botswana still leads with 144 deaths compared to Ghana's 308 deaths per 100 000 live births (Figure 4d). A metric that is important to consider when examining maternal mortality rates is that of births attended by skilled personnel. It is an indicator of access. In 2006, Botswana had 99.3% of births attended to skilled personnel. This is compared to Ghana's 49.7% in 2006. In 2019, Botswana still had very high delivery assistance at 99.8%. Ghana took great strides in improving the percentage of births attended to skilled personnel, raising the percentage to 78.1% (Figure 4e).

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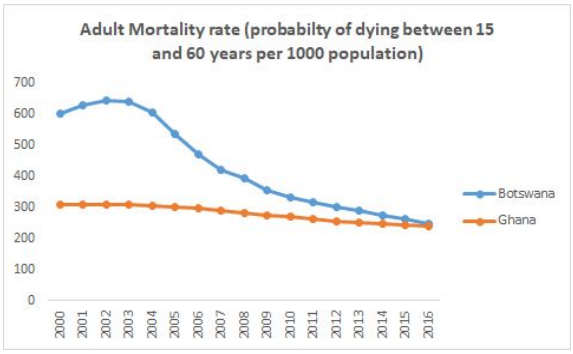

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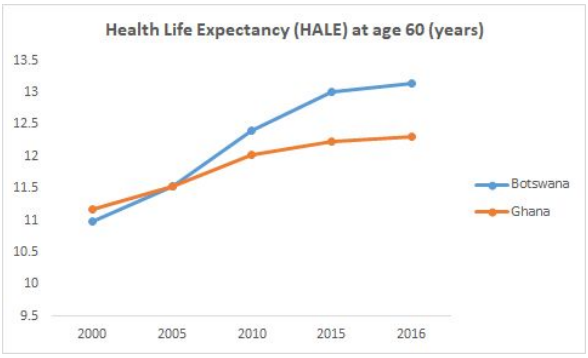

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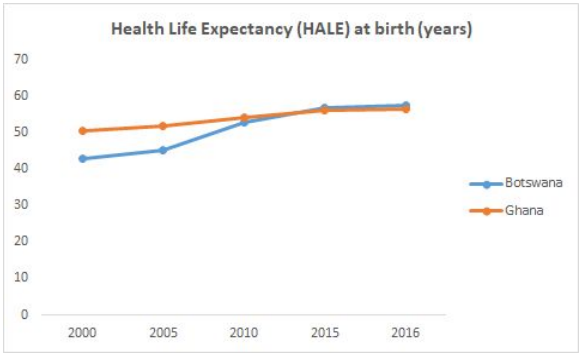

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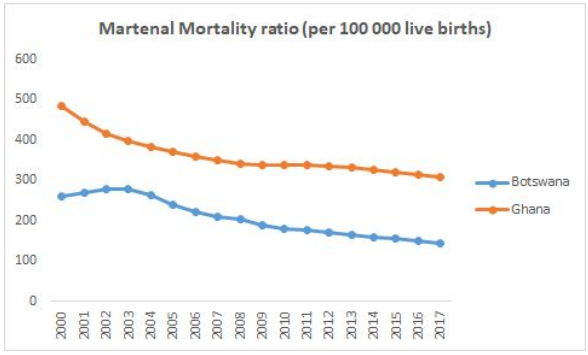


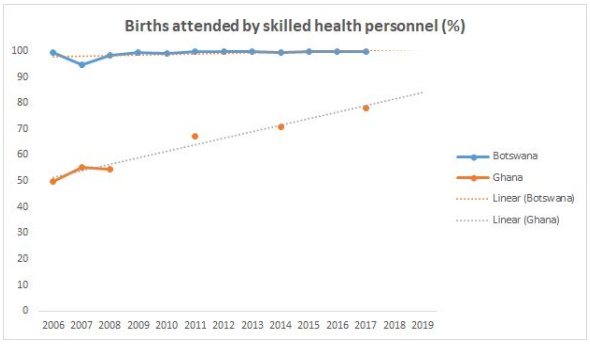
e) 

Figure 4. a) Adult mortality rates[15] b) Health Life Expectancy at age 60 years[16] c) Health Life Expectancy at birth[17] d) Maternal Mortality Ratio per 100 000 live births[18] e) Births attended by skilled health personnel[19]

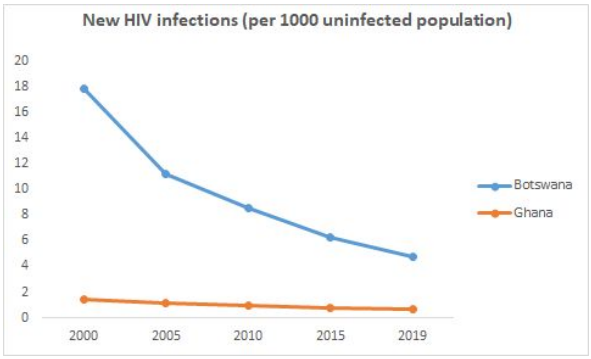
ii) HIV/Aids

HIV/AIDS is the number one cause of death in Botswana and the sixth top cause of death in Ghana in 2019. In 2000, Botswana had almost 18 new infections of HIV per 1000 uninfected population. Ghana had 1.47 new infections of HIV per 1000 uninfected population. Botswana's new infections are reducing, approaching about 5 new infections per 1000 population in 2019, compared to 0.7 new infections per 1000 population in Ghana (Figure 5a).

Prevalence of HIV/AIDS was also graphed, and expectedly, Botswana had higher rates of HIV/AIDS prevalence. In 2000, 26.1% of adults aged between 15 and 60 years old had HIV/AIDS. In 2000, only 2.3% of adults in Ghana had HIV/AIDS. Botswana made improvements with 20.7% of prevalence of HIV/AIDS but this was still very much higher than Ghana's 1.7% (Figure 5b).

Since HIV/AIDS is a bigger problem in Botswana than it is in Ghana, it is expected that HIV/AIDS interventions would be much more aggressive in Botswana than in Ghana. Estimated antiretroviral therapy coverage among people living with HIV (PLWHIV) was graphed. In 2019, 82% of PLWHIV were covered with antiretroviral therapy. 45% of Ghanain PLWHIV were received coverage for HIV (Figure 5c).

a)



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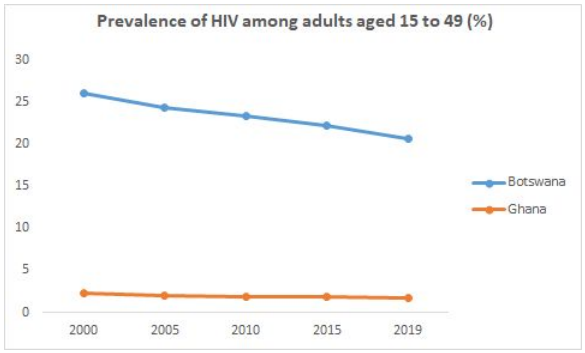

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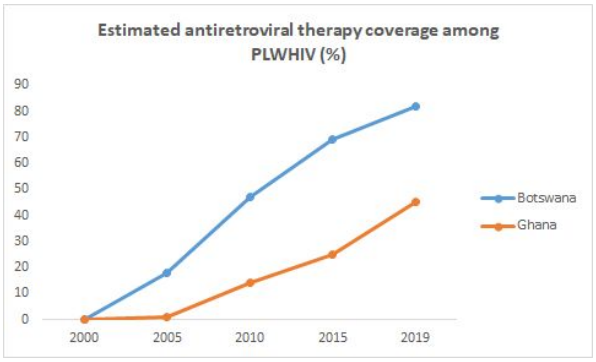

Figure 5. a) New HIV infections per 1000 uninfected population between 2000 and 2019 [20] b) Prevalence of HIV among adults between 2000 and 2019 [20] c) Estimated ARV therapy coverage among PLWHIV between 2000 and 2019 [20]

iii) Tuberculosis

Tuberculosis is the seventh top cause of death in both Botswana and Ghana in 2017. Tuberculosis is one of the most common comorbidities of HIV/AIDS. Since HIV/AIDS has much larger prevalence in Botswana and very low prevalence in Ghana, tuberculosis among those who are HIV negative would be a more accurate representation of tuberculosis infection and treatment in Ghana. In 2000, Ghana and Botswana had comparable deaths due to TB among HIV negative people per 100 000 population (46 and 44 respectively).

In 2017, the number of deaths decreased to 36 in Ghana and 17 in Botswana (Figure 6a). Botswana is doing better in handling TB than Ghana. Once again, this result might be a result of more aggressive

therapy efforts in Botswana that are enabled by the high prevalence of HIV/AIDS. If those who are affected by HIV/AIDS require TB treatment because of their vulnerability to it, then those who are HIV negative but TB infected will still have access to those dedicated resources. As such, as Botswana is the most infected with HIV/AIDS, tuberculosis effective treatment coverage is expected to be higher. In 2000, Botswana had about 50% TB effective treatment coverage compared to Ghana's 14%. In 2017, Botswana was still leading in effective TB treatment coverage at 58.5% compared to Ghana's 27.2% (Figure 6b).

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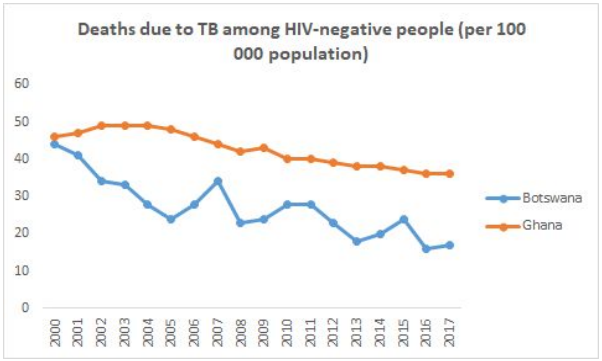

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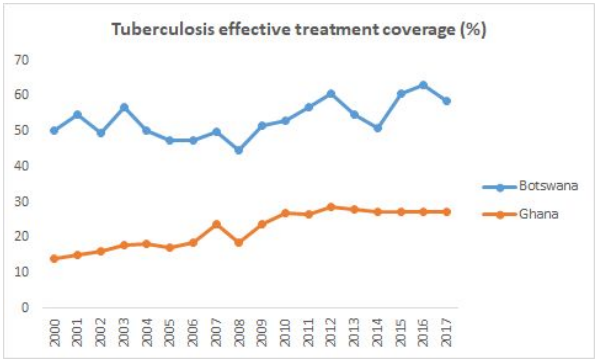


Figure 6. a) Deaths due to TB among HIV-negative people per 100 000 population between 2000 and 2017 [21] b) TB effective treatment coverage (%) between 2000 and 2017 [22]

iv) COVID-19

Recently, the COVID-19 pandemic has ravished the public health arena and tested the strengths of health systems. A concern of COVID-19 in African countries is that the disease's symptoms overlap with other diseases that are prevalent in high numbers such as tuberculosis, viral and bacterial respiratory tract infections and pneumonia. This overlap is further worsened by the lack of diagnostic facilities on the continent.[23]

As of December 17th 2020, Botswana had 12,873 confirmed cases (0.56% of population) and 38 deaths from COVID-19. Ghana by December 17th 2020 had 53,386 confirmed cases (0.18% of population) and 327 deaths. From these numbers, Ghana has a greater absolute number of confirmed cases, but it is performing much better than Botswana in terms of prevalence in population.

Ghana has one of the highest testing rates in Africa. Ghana started testing travellers on arrival and isolating cases that tested positive. By the end of April 2020, Ghana had performed between 110,000 and 120,000 tests. Ghana has also developed a finger-prick rapid blood test for identification of antibodies. This is a useful test that is beneficial to reduce spread of asymptomatic cases.[23]

The Ghana Priorities project did a study that encouraged Ghana's government to enact low-cost social restrictions such as physical distancing, non-contact greetings, cocooning the elderly and hand washing. They discouraged shutting down schools as the future opportunity cost would outweigh the benefits of avoided deaths.[24]

Ghana has by far been a hub of innovation and scientific research when it comes to COVID-19. Innovations that have emerged out of Ghana include the pool testing method where samples of ribonucleic acid from several people are tested collectively to reduce time and testing kits required. If the mini-pool tests positive, then tests are carried out on individual specimens.[25]

Ghana is also the first country in the world to introduce autonomous drone technology for delivery of samples taken from suspected COVID-19 cases in remote areas to testing facilities in Accra and Kumasi. Test results are then communicated by text message (SMS). Drones increase capacity and efficiency for testing by reducing the transportation time and necessity for travel. The drones can carry up to 15 000 test samples per day in 300 flights.[25] Drones have also been used for haulage of personal protective equipment (PPE). Ghana has also introduced the COVID-19 Tracker App which is a digital tool that helps in contact tracing. Ghana's scientists and technology developers have also developed rapid diagnostic test kits and low cost ventilators. The rapid diagnostic kit uses an immunoassay to detect COVID-19 antibodies.[25]

Ghanaian researchers have developed a solar powered automated hand-washing machine and electronic bucket to increase hand washing frequency with soap and clean water.[25] The machine discharges soap and allows 15 seconds for scrubbing then outputs a stream of water from a bucket that has enough water for use 150 times before the need for refill. Ghana has also localized the production of COVID-19 PPE such as gloves, nose masks, face shields, N-95 face masks, medical scrubs, gowns, and head covers.[25]

In addition to these research efforts, Ghana also waived water bills for six months and half of the electricity bills for six months. Healthcare workers also have their taxes waived.

Botswana's COVID-19 intervention has been through a matrix of three economic interventions. The first one was a wage subsidy of 50% of basic salary of citizen employees. The objective of his wage subsidy program was to give businesses cash flow so that they would be able to keep workers employed and avoid retrenchments.[26] The second intervention by Botswana was a loan guarantee which supported businesses affected by COVID-19 credit to continue operations. The third intervention was supported by the Citizen Entrepreneurial Development Agency (CEDA) to support small and medium sized enterprises by waving interests on loans for 12 months and deferring three to six month's rental for tenants.[26]

Botswana had a low importation risk of COVID-19 from China when it was first declared an international epidemic on January 30, 2020. Botswana's risk of entry is negligible.[27] At the time of writing this paper, Botswana had no clinical trial on COVID-19.[27] However, the University of Botswana had called for proposals on COVID-19 research. Likewise, Ghana also did not have any clinical trials for COVID-19.[25] However, traditional medicine is a massive industry in Ghana's medical landscape and medicinal plants that have antiviral activity were submitted to the Centre for Scientific Research into Plant Medicine and to the Noguchi Memorial Institute for Medical Research.[27]

Ghana's effective response has proven to be one of the best in Africa. This can be attributed to Ghana's robust research infrastructure with very well established universities and hospitals. Botswana is very young when it comes to research infrastructure. The national university - University of Botswana established the first medical school in the country in 2009.[28] This can be compared to the first medical school in Ghana at the University of Ghana which was established in 1962.[29]

DISCUSSION

i) Financing Healthcare in Botswana and Ghana

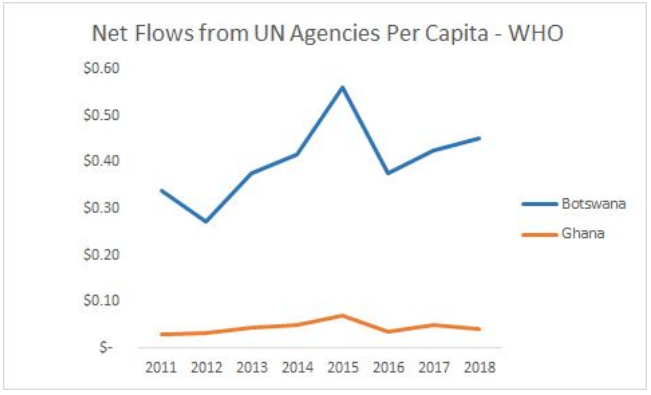
The Sustainable Development Goals of 2015 set a target for sub-Saharan African countries to achieve universal healthcare coverage. The burden of high out-of-pocket costs was identified as being the health

financing mechanism with the highest percentage of healthcare expenditures. As we saw in the results, Ghana has way higher out-of-pocket expenditures on healthcare than Botswana. Out of pocket expenditures are detrimental to health outcomes because large portions of families' incomes have to go to health care costs and at times, when families cannot afford that expense, dire health outcomes exist. The Sustainable Development Goals aim to reduce out-of-pocket expenditures and increase the domestic prepayment funds from taxes and national health insurance schemes.[9] Equitable access to quality of care will occur through strategic revenue collection of healthcare financing. At the moment, health care financing in Botswana is through domestic revenue from mineral revenue and external funds.[7] In Ghana, healthcare financing is through a National Health Insurance Levy that is charged as 2.5% of taxable income and external funds. Ghana's NHIS is largely tax based with a smaller contributory portion from the government.[9] Botswana's healthcare is largely government funded from the country's resources. Botswana is able to spend more on healthcare through their model.

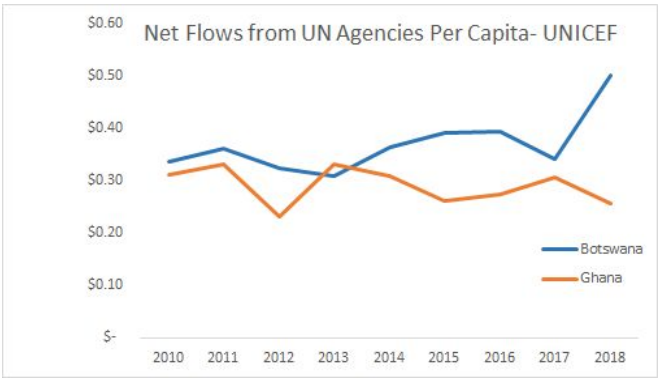
iv) External Aid

Net official flows from UN agencies represent the net disbursements from the UN agencies such as the United Nations Children's Fund (UNICEF), Joint United Nations Programme on HIV/AIDS (UNAIDS), World Health Organization (WHO) and United Nations Development Program (UNDP).These flows comprise of Official Development Assistance (ODA) or official aid. ODA constitutes loans made on concessional terms to promote economic development and welfare in the recipient country. [31]

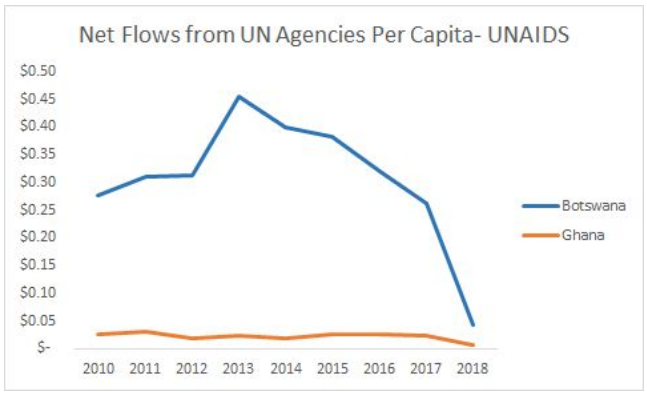
a)



b)



c)



d)

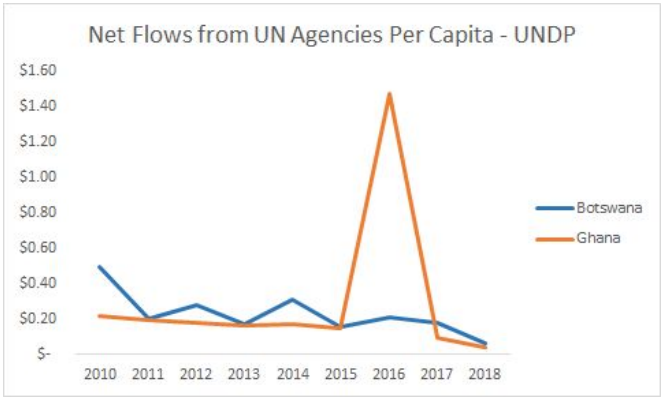


Figure 7: a) Net Flows from the WHO per capita. b) Net Flows from the UNICEF per capita. c) Net Flows from UNAIDS per capita. d) Net Flows from UNDP per capita.

The per capita values above were calculated by dividing the aid provided in US$ with the population of the countries. Aid from the World Health Organization (WHO) in 2018 was a little above one million US dollars for Botswana, which translates to US$0.45 per capita. This is compared to Ghana which received $920,000 from WHO in 2018, translating to US$0.04 per capita. (Figure 7a)[31]

The United Children's Fund (UNICEF) provided just over one million US dollars to Botswana in 2018, translating to $0.50 per capita. Ghana received just below eight million US dollars from UNICEF which translated to US$0.26 per capita. (Figure 7b).[31] The Joint United Nations Programme on HIV/AIDS (UNAIDS) provided a little below hundred thousand US dollars to Botswana, which is US$0.04 per capita. The UNAIDS provided about US$250,000 to Ghana and this was US$0.01 per capita. (Figure 7c).[31] The United Nations Development Program (UNDP) provided just over a million US dollars to Botswana in 2018, which was US$0.06 per capita. Ghana also received just over a million dollars from UNDP, translating to US$0.04 per capita. (Figure 7d).[31] Apart from the WHO, Ghana received more aid on an absolute dollar basis, but then calculated per capita, Botswana received more aid.

The observation that Botswana received more aid from external authorities on a per capita basis ties to the next section's discussion of democracy. Foreign entities are more inclined to provide aid to countries that have responsible governing. Botswana is second in Africa in quality of democracy, and Ghana is fifth.

iii) Type of Governmentality - Democracy and Health

Besley and Kudamatsu conducted a study where they modelled the correlation between democracy and life expectancy. They used panel data obtained from different countries over 5 decades and adjusted for income. Their study produced robust evidence for a correlation between life expectancy at birth and democracy.[32] Democracy in Africa is a contentious issue that resists assimilation, is associated with a legacy of colonization,Western control and neocolonialism, and lies on a spectrum of congruency to the ideological definition of democracy. Democracy in this paper is defined as "a system of government by the whole population or all the eligible members of a state, typically through elected representatives".[33] This definition has different connotations and applications in Africa - because a country could have elected officials but the election process, system and controls are very much deviant from the ideological assumptions of what democracy entails.

The conversation of the association between health of a country and its political landscape is an essential one because politics and governmentality are the pivots on which decisions that affect health of populations stand on. The issue of democracy in Africa is also an important one because the continent, fortunately or unfortunately, is still being controlled by outside powers on the basis of whether the nation state is run under a "recognized democracy". I say recognized democracy because there have been some cases where a country's politicians are elected according to the definition of democracy and according to their constitutions' directives but their government left unrecognized by western powers because of one reason or the other. The reason why western acknowledgement of democracies in Africa is an important conversation is that it is an unfortunate reality that the majority of the world's money is controlled by the same western powers. They are the ones who make the decisions of who is worthy or not worthy to

receive funding and developmental loans from the International Monetary Fund or the World Bank. They have the power to impose sanctions on a country that does not follow the precepts of democracy.

In relation to Africa, Acemoglu acknowledged the distant conformity of practiced democracy to its ideological definition by modelling democracy as a dictatorship of the poor and middle classes and autocracy as a dictatorship for the rich.[34] This model tries to explain that practiced democracy is not perfect but there is importance in who yields political power. In a democracy, the poor and middle classes have impetus to push for public health decisions that affect them. In a democracy, failure to address these issues would lead to change in government since the power is in the hands of the poor and middle class. In an autocracy, the rich who control the policy decisions and government spending do not have an incentive to pursue matters of public health.[33] Therefore, the correlation between public health and democracy is that for re-election, politicians have incentive to put in place public health decisions and funding mechanisms that will make the population happy. Democracies have more accountability with the population.[33]

In this study, I looked at two African countries- Botswana and Ghana. These two are considered well-run democracies in Africa. According to the Economist Intelligence Unit democracy report of 2019, Botswana ranked second, behind Mauritius on a democracy ranking.[35] Ghana was fifth on the continent behind Mauritius, Botswana, Cabo Verde and South Africa. In the world, Botswana was 29th and Ghana was 55th. Both countries were labelled as flawed democracies.[35] The only country in Africa which had a full democracy was Mauritius.

Democracy is linked to willingness to funding from external sources. Botswana is considered to be more democratic than Ghana, and therefore receives more funding from external sources.

Country	Global Rank	Regional Rank	Electoral process & pluralism	Functioning of government	Political participation	Political culture	Civil Liberties	Regime Type
Mauritius	17	1	9.17	8.21	5.56	8.75	9.41	Full democracy
Botswana	29	2	9.17	7.14	6.11	7.50	9.12	Flawed democracy
Cabo Verde	30	3	9.17	7.36	6.67	6.88	8.82	Flawed democracy
South Africa	40	4	7.42	7.50	8.33	5.00	7.94	Flawed democracy
Ghana	55	5	8.33	5.71	6.67	6.25	6.18	Flawed democracy

Table 3: Sub-Saharan Africa 2019, The Economist Intelligence Unit [35]

CONCLUSION

This paper assessed health outcome indicators such quality and access with the goal of relating these to the implications of the mechanism of financing healthcare. When it comes to access, quality and cost of healthcare, we have seen that variations exist between the two countries - Ghana and Botswana. In terms of healthcare expenditures per capita, Botswana spends more on healthcare than Ghana.

This paper assessed health outcome indicators such quality and access with the goal of relating these to the implications of cost spent on healthcare. Quality was measured by looking at the type of hospital infrastructure. Botswana and Ghana had similar access to hospitals. However, Ghana's hospital access was more concentrated in district/rural hospitals which have lower quality of care than provincial or specialized hospitals. The conclusion from this result is that Ghana and Botswana have comparable access to hospitals per capita but different distributions to type of hospital. Botswana has more access to provincial hospitals which have better quality care. In Ghana, district hospitals can provide curative care, preventive care and higher quality clinical care from higher skilled personnel that cannot be accessed at health centers and polyclinics.[30] The district hospital is the first referral hospital and should provide laboratory, medical and surgical services.

Mortality and life expectancy are indicators of quality of healthcare. Ghana performs better than Botswana in terms of adult mortality rate and health life expectancies at age 60 and at birth. However, the improvement is slower and steady as compared to that of Botswana that is rapidly decreasing and catching up with Ghana. In terms of births attended by skilled personnel and maternal mortality, Botswana performs better than Ghana. This might be because of larger investments on HIV therapy and prevention of mother to child transmission. This leaves Botswana with greater investments around maternal health which would translate into lower maternal mortality ratios per 100 000 live births. Ghana's new infections of HIV are very low compared to those of Botswana. However, Botswana is working to lower the rate of new infections. Ghana also has very low prevalence of HIV amongst adults aged 15 to 49. This may explain why there is lower investment in antiretroviral therapy coverage among people with HIV in Ghana than in Botswana.

Tuberculosis is another cause of death ranking seventh in both Ghana and Botswana. Tuberculosis is a comorbidity of HIV/AIDS. There are more deaths due to TB among HIV negative people in Ghana.
There is higher effective TB treatment coverage in Botswana. This may be the case because of high HIV/AIDS therapy coverage in Botswana and so efforts are invested in treating TB which appears frequently with HIV/AIDS.

The outcomes that are uncovered by this study show that even though both Ghana and Botswana have achieved universal health coverage, there are still inefficiencies in utilization of quality healthcare. Universal health coverage is achieved in these countries by different models. McIntyre argues that the contributory health model is inefficient in providing equitable and efficient care. This is the model that Ghana uses. The model of government allocation of funds from the country's resources, such as the one that Botswana uses, is more efficient.

Such a recommendation for Ghana and other African countries to use their resources to finance health care is not an awkward one since Ghana is very rich in gold and cocoa beans. Botswana uses its revenue from diamonds. The rest of the African countries are also very rich in minerals and exportables.

The next conversation would be regarding the political systems around the revenue flow from those minerals.

REFERENCES

1. World Health Organization (WHO), and World Bank. *Global Monitoring Report on Financial Protection in Health 2019*, World Health Organization and the International Bank for Reconstruction and Development / The World Bank, 2020, 2019, apps.who.int/iris/bitstream/handle/10665/331748/9789240003958-eng.pdf?ua=1.
2. Wikipedia contributors. "Health in Botswana." Wikipedia, The Free Encyclopedia. Wikipedia, The Free Encyclopedia, 20 Dec. 2020. Web. 23 Dec. 2020.
3. Wikipedia contributors. "Health in Ghana." Wikipedia, The Free Encyclopedia. Wikipedia, The Free Encyclopedia, 20 Dec. 2020. Web. 23 Dec. 2020.
4. Pariona, Amber. "Botswana: Life Expectancy, Death Rate, Leading Causes of Death." WorldAtlas, WorldAtlas, 8 Mar. 2019, www.worldatlas.com/articles/leading-causes-of-death-in-botswana.html.
5. "CDC Global Health - Ghana." Centers for Disease Control and Prevention, Centers for Disease Control and Prevention, 12 Aug. 2019, www.cdc.gov/globalhealth/countries/ghana/default.htm.
6. Kissick, William L. Medicine's Dilemmas: Infinite Needs versus Finite Resources. Yale University Press, 1994.
7. PEPFAR. HEALTH FINANCING PROFILE Botswana. May 2016, www.healthpolicyproject.com/pubs/7887/Botswana_HFP.pdf.
8. Price Waterhouse Coopers. "Navigating Taxation 2019: Ghana Tax Facts and Figures." *Navigating Taxation 2019 Ghana Tax Facts and Figures*, PWC, Aug. 2019, www.pwc.com/gh/en/assets/pdf/ghana-tax-facts-and-figures-2019.pdf.

9. McIntyre, Diane, et al. "Challenges in financing universal health coverage in sub-Saharan Africa." Oxford Research Encyclopedia of Economics and Finance. 2018.
10. " Healthcare Spending 2010-2020." MacroTrends, www.macrotrends.net/countries/GH/Ghana/healthcare-spending.
11. "General Government Expenditure on Health as a Percentage of Total Government Expenditure." World Health Organization, World Health Organization, www.who.int/data/gho/data/indicators/indicator-details/GHO/general-government-expenditure-on-health-as-a-percentage-of-total-government-expenditure.
12. "Out-of-Pocket Expenditure (OOP) per Capita in PPP Int$." *World Health Organization*, World Health Organization, www.who.int/data/gho/data/indicators/indicator-details/GHO/out-of-pocket-expenditure-(oop)-per-capita-in-ppp-int.
13. "Health Infrastructure." World Health Organization, World Health Organization, www.who.int/data/gho/data/themes/topics/topic-details/GHO/health-infrastructure.
14. Tlotlego, Naomi, et al. "Assessment of productivity of hospitals in Botswana: a DEA application." *International archives of medicine* 3.1 (2010): 27.
15. "Adult Mortality Rate (Probability of Dying between 15 and 60 Years per 1000 Population)." World Health Organization, World Health Organization, www.who.int/data/gho/data/indicators/indicator-details/GHO/adult-mortality-rate-(probability-of-dying-between-15-and-60-years-per-1000-population).
16. "Healthy Life Expectancy (HALE) at age 60 (Years)." *World Health Organization*, World Health Organization, www.who.int/data/gho/data/indicators/indicator-details/GHO/gho-ghe-hale-healthy-life-expectancy-at-age-60.
17. "Healthy Life Expectancy (HALE) at Birth (Years)." *World Health Organization*, World Health Organization,

www.who.int/data/gho/data/indicators/indicator-details/GHO/gho-ghe-hale-healthy-life-expectancy-at-birth.

18. "Maternal Mortality Ratio (per 100 000 Live Births)." World Health Organization, World Health Organization, www.who.int/data/gho/data/indicators/indicator-details/GHO/maternal-mortality-ratio-(per-100-000-live-births).
19. "Births Attended by Skilled Health Personnel (%)." World Health Organization, World Health Organization, www.who.int/data/gho/data/indicators/indicator-details/GHO/births-attended-by-skilled-health-personnel-(-).
20. "Data on the Size of the HIV/AIDS Epidemic." World Health Organization, World Health Organization, www.who.int/data/gho/data/themes/topics/topic-details/GHO/data-on-the-size-of-the-hiv-aids-epidemic.
21. "Deaths Due to Tuberculosis among HIV-Negative People (per 100 000 Population)." World Health Organization, World Health Organization, www.who.int/data/gho/data/indicators/indicator-details/GHO/deaths-due-to-tuberculosis-among-hiv-negative-people-(per-100-000-population).
22. "Tuberculosis Effective Treatment Coverage (%)." World Health Organization, World Health Organization, www.who.int/data/gho/data/indicators/indicator-details/GHO/tuberculosis-effective-treatment-coverage-(-).
23. Ogunleye, Olayinka O., et al. "Response to the Novel Corona Virus (COVID-19) Pandemic Across Africa: Successes, Challenges, and Implications for the Future." Frontiers in pharmacology 11 (2020): 1205.\

24. Ghana Priorities Project. (2020). A rapid cost-benefit analysis of moderate social distancing in response to the COVID-19 pandemic in Ghana. 20 May 2020. Available at: https://www.copenhagenconsensus.com/sites/default/files/covid_brief_for_ndpc_ghana_final.pdf.
25. Sibiri, H., S. M. Zankawah, and D. Prah. "Coronavirus diseases 2019 (COVID-19) response: Highlights of Ghana's scientific and technological innovativeness and breakthroughs." Ethics, Medicine and Public Health 14 (2020): 100537.
26. GOVERNMENT COVID-19 ECONOMIC RESPONSES. 2020, gobotswana.com/sites/default/files/bb_governement_covid-19_economic_response_v3.pdf. bb_governement_covid-19_economic_response_v3.pdf (gobotswana.com)
27. Gilbert, Marius, et al. "Preparedness and vulnerability of African countries against importations of COVID-19: a modelling study." The Lancet 395.10227 (2020): 871-877.
28. Wikipedia contributors. "University of Botswana." Wikipedia, The Free Encyclopedia. Wikipedia, The Free Encyclopedia, 11 Dec. 2020. Web. 23 Dec. 2020.
29. Wikipedia contributors. "University of Ghana." Wikipedia, The Free Encyclopedia. Wikipedia, The Free Encyclopedia, 11 Dec. 2020. Web. 23 Dec. 2020.
30. Regional and District Administration: Ghana Health Services , www.ghanahealthservice.org/ghs-subcategory.php?cid=2.
31. Oecd. “OECD Statistics.” OECD Statistics: Development Assistance Committee of the Organisation for Economic Co-Operation and Development, Geographical Distribution of Financial Flows to Developing Countries, Development Co-Operation Report, and International Development Statistics Database. , stats.oecd.org/.
32. Besley, Timothy, and Masayuki Kudamatsu. "Health and democracy." American economic review 96.2 (2006): 313-318.
33. DK Illustrated Oxford Dictionary. Dorling Kindersley, 2003.
34. Acemoglu, Daron, and James A. Robinson. Economic origins of dictatorship and democracy. Cambridge University Press, 2006.

35. Sullivan, Thomas. “Economist Intelligence Unit (EIU): Democracy Index 2019 A Year of Democratic Setbacks and Popular Protest.” CC Advisor, 2019, pp. 43–46., doi:10.5260/cca.199450.